HEMATITE FUEL FABRICATION FACILITY, ERBIA PLANT
(Building No. 255)
3300 State Road P
Festus
Jefferson County
Missouri

HAER MO-113-L
MO-113-L

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
U.S. Department of the Interior
1849 C Street NW
Washington, DC 20240-0001

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HEMATITE FUEL FABRICATION FACILITY
BUILDING 255
(Erbia Plant)

HAER No. MO-113-L

Location: 3300 State Road P
Festus, Jefferson County, Missouri

Present Owner: Westinghouse Electric Company Limited Liability Corporation (LLC)

Present Use: Abandoned; in process of deactivation for removal of hazardous substances, and preparation for decommissioning and demolition.

Significance: The Hematite Fuel Fabrication Facility, also known as Hematite Former Fuel Cycle Facility and the Westinghouse Electric Company Hematite Facility, was constructed over a period of thirty-one years. The Facility was the first privately owned and operated uranium fuel production plant in the United States. The plant produced nuclear fuel for military as well as peacetime purposes throughout the "Cold War" era.

The Hematite Fuel Fabrication Facility produced high-enriched nuclear fuel for the U.S. Navy nuclear submarine program and other reactor programs during the "Cold War" years of 1956 to 1974. After 1974 the Facility produce only commercial grade low enriched uranium for commercial nuclear power facilities.

PART I. HISTORICAL INFORMATION

A. Physical History

1. **Date of Construction:** 1958

2. **Architect:** The architect for this building is unknown.

3. **Owners, Occupants and Uses:** Owners include: Mallinckrodt Chemical Works, United Nuclear Corporation, Gulf United Nuclear Fuels Corporation (Gulf), Combustion Engineering Corporation, Asa Brown Boveri (ABB), and Westinghouse Electric Company, LLC. Building 255 was used for the fabrication of uranium compounds into physical shapes.

4. **Builder-Contractor:** The contractor is unknown.

5. **Original Plans and Construction:** The original plans are held by Westinghouse Electric Company LLC.

6. **Alterations and Additions:** The only known addition or alteration was done in the 1980s when Building 255 was connected to Building 250 and 251 by the construction of Building 240.

B. Historical Context

Building 255 was used for the fabrication of uranium compounds into physical shapes; it was segregated into low and high enrichment areas. The processes undertaken in Building 255 were described in the bi-monthly Mallinckrodt Chemical Works publication "here the uranium dioxide will be pressed into pellets at about fifty tons of pressure per square inch. They will be fired at about 3000 degrees Fahrenheit into finished shapes. These shapes may then be grounded to close tolerances and loaded into tubes. Those tubes are later fabricated into fuel elements which go into reactor cores."[1]

[1] MCW News, "Hematite Revisited: The Men From Mechanical," Vol. 3, No. 2 (February-March 1959), 4.

The building was partitioned into three rooms, Room 255-1, the Development Plant, Room 255-2, contained the low-enrichment Pellet Plant, and Room 255-3 was referred to as the "Item Plant." The "Item Plant" was dedicated solely to the production of classified government related work, specifically high enriched naval fuel production.

Other activities within Building 255-3 included the blending of Uranium Oxide (UO2) with other chemical compounds. One of the original scientists developing high-enriched fuel for government contracts was James Rode. In a deposition Mr. Rode discussed the first project "carried out at the Hematite Plant, was to produce ninety-three percent enriched high fired UO2 for the Aircraft Nuclear Propulsion Project. The prime contractor for that was General Electric."[2]

Between 1972 and 1974 Gulf had been scaling back and ceasing uranium production completely. When Combustion Engineering purchased the plant, Hematite no longer continued to produce high-enriched uranium products. The rooms in Building 255 became the main pellet production area from 1974 to 1989, at that time the process was moved from Building 255 into Building 254.

In 1989, Building 255 was modified into an open floor plan and became what is known today as the "Erbia Plant." During an oral interview with Arland Novak, an employee at the Facility since 1966, explained what Erbia is and how it was processed and used at the Facility, "Erbia . . . is a poison that is put into the U2 powder and made into pellets by a certain percentage, and it slows down the reaction in the reactor. It does not go into every rod, but certain rods in the reactor [bundle] so they can control the reaction better."[3] Erbia pellet production continued at the Facility until 2001 when Westinghouse Electric Company, LLC, closed the Facility and began the decommissioning process.

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[2] James A. Rode, Deposition held at the law offices of Babst and Calland, Pittsburgh, Pennsylvania. November 13, 2001, 199.

[3] Arland Novak (former employee of Hematite Fuel Fabrication Facility/consultant to Westinghouse Electric Company LLC), in discussion with the author, August 4, 2003.

PART II. ARCHITECTURAL INFORMATION

A. General Statement

1. **Architectural character:** Modern industrial

2. **Condition of fabric:** Fair condition

B. Description of Exterior

1. **Overall dimensions:** Building 255 measures 82'-5" x 177'-6." Building 255 measures 14,596 total square feet.

2. **Foundation:** Reinforced concrete

3. **Walls:** Concrete block

4. **Structural system, framing:** Steel beams

5. **Porches:** There are no porches.

6. **Chimneys:** There are no chimneys.

7. **Openings:**

   a. **Doorways and Doors:** There are two doors that exit the building on the north, three doors on the east that enter Building 260, two doors on the south that enter Building 256, and four doors that exit into building 254.

   b. **Windows:** There are no windows.

8. **Roof:**

   a. **Shape, covering:** Flat, metal sheathing on concrete

   b. **Cornice, eaves:** There are no cornices or eaves.

   c. **Dormers, cupolas, towers:** There are no dormers, cupolas, or towers.

C. **Description of Interior**

1. **Floor plans:** Building 255 is divided into many rooms of varying sizes, there are doors that allow access from one room to the other. The mezzanine levels are raised platforms that give access to equipment.

2. **Stairways:** There are stairways on the north and south that lead to mezzanine levels.

3. **Flooring:** Concrete slab

4. **Wall and ceiling finish:** Painted concrete block and exposed steel beams

5. **Openings:** There are fifteen interior openings in Building 255.

6. **Decorative features:** There are no decorative features.

7. **Hardware:** Modern industrial hardware

8. **Mechanical equipment:**

   a. **Heating, air conditioning, ventilation:**

   b. **Lighting:** Fluorescent

   c. **Plumbing:** Modern plumbing system

D. **Site**

1. **General setting and orientation:** Building 255 is bounded by Building 254 on the west, Building 260 on the east and Building 256 on the south. The men's locker room exits outside on the north.

2. **Historic landscape design:** Vernacular landscape design.

PART III. SOURCES OF INFORMATION

A. Architectural drawings: The original plans are currently held by Westinghouse Electric Company Limited Liability Corporation (LLC).

B. Bibliography:

Mallincrodt Chemical Works. "Hematite Revisited: the Men from Mechanical." *Mallinckrodt Chemical Works News* 3, no.2 (1959): 2-5.

Novak, Arland. Ausust 4, 2003, former employee of Hematite Fuel Fabrication Facility/consultant to Westinghouse Electric Company LLC, in discussion with the author.

Rode, James A. Deposition. November 13, 2001, in Westinghouse Electric Company LLC v US and etal. Case no.4:2003cv00861. Deposition held at the law offices of Babst and Calland, Pittsburgh, Pennyslvania.

PART IV. PROJECT INFORMATION

This Historic American Engineering Record (HAER) documentation project was undertaken due to the owner's desire to decommission the Facility. The Facility will be disassembled (this is being done for safety purposes and the work is being done in accordance with Federal Laws and regulations regarding hazardous waste clean-up and disposal). In 2003, Westinghouse Electric Company, LLC, hired SCI Engineering, Inc., of St. Charles, Missouri, to complete the HAER documentation of the Hematite Fuel Fabrication Facility. Dr. Steve Dasovich supervised the project and Historian Colleen Small-Vollman authored the HAER documentation report. The report was compiled by Susan Sheppard. Bruce Meyer and Todd Kapler completed the photographic documentation of the Facility, and Asa Westphal completed the floor plan drawings.